**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs, 14-18:

**Network communication standards**

**Networks are classified according to below and we will study the following:**

1. Network Categories: LAN, WAN
2. Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet
3. Network communication standards
4. Network hardware and software
5. Transmission media
6. Network security

**NETWORK COMMUNICATION STANDARDS**

1. **Why are network standards required?**

Network standards have been designed to overcome the problems of incompatibility on a network and to ensure that hardware and software components. So that any device can connect to any other device.

1. **What is a protocol?**

A protocol is a standard that defines how two computers or devices on a network transmit data. Example, TCP/IP

1. **What is the OSI?**

OPI is a standard for networks communication that defines the structure of a protocol.

**ETHERNET**

1. **Describe the nature of Ethernet.**

Used for schools and home networks, allows devices to connect and transfer data.

1. **What are frames?**

Frames are short messages sent between nodes to allow Ethernet communications.

1. **Identify the 4 components of all Ethernet frames.**

Destination address, sending address, data and parity information.

1. **Fig. 1-9 on p 17 lists the Ethernet type, cable type, maximum length and transfer rate for Ethernet transmissions. The College typically uses 100BaseTX, Cat 5 or10Gbase-T. What are their respective maximum lengths and transfer rates?**

|  |  |  |
| --- | --- | --- |
| **CABLE TYPE** | **MAXIMUM LENGTH** | **TRANSFER RATE** |
| Thin coaxial | 180m | 10 Mbps |
| Thick coaxial | 500m | 10 Mbps |
| Two twisted pairs  (Cat 3 0r Cat 5) | 85m | 10 Mbps |
| Fibre optic | 2km | 10 Mbps |
| Two twisted pairs  (Cat 5) | 85m | 100 Mbps |
| Multimedia Fibre-optic | 2km | 100 Mbps |
| Single-mode fibre-optic | 10km | 100 Mbps |
| Two twisted pairs  (Cat 5e or Cat 6) | 85m | 1 Gbps |
| Multimedia Fibre-optic | 220m | 1 Gbps |
| Multimedia Fibre-optic | 550m | 1 Gbps |
| Single-mode fibre-optic | 2km | 1 Gbps |
| Two twisted pairs  (Cat 5e or Cat 6 or Cat 7) | 85m | 10 Gbps |

**TCP/IP**

1. **Describe the nature of TCP/IP.**

TCP/IP is the most common protocol. It is the protocol you need to use the internet. The TCP/IP protocol defines how data is carried from one part of the network to the other. The protocol specifies the rules used to construct packets of data. It specifies the address scheme for the sending and receiving devices, an error checking mechanism and how the flow around the network is regulated.

1. **TCP/IP uses smaller packets than other protocols. Why is this an advantage on the internet?**

There are many different pathways that a packet can take to get from the origin to the destination and the packets do not necessarily all travel the same path. Smaller packets allow more efficient load balancing to allow the internet to run more smoothly and efficiently.

**802.11 WIRELESS STANDARD**

1. **What does this standard do?**

This standard defines how two computers or devices can communicate using radio waves. A network that uses the 802.11 standard is known as a Wi-Fi network.

1. **What is a Wi-Fi network?**

Wi-Fi stands for Wireless fidelity. Wi-Fi networks allow computers that are up to 50 metres apart to be connected without the need for wires.

1. **Different wireless standards transmit at different frequencies. What is the advantage of the newer 802.11n standard?**

The newer 802.11n standard operates at 5 GHz or 2.4GHz and is faster and support a larger range than previous standards, up to 70m.